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A Newly Discovered Habitat for *Isoëtes melanopoda* in Louisiana

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Isoëtes melanopoda Gay & Dureau, Blackfoot Quillwort, ranges from Georgia to Texas and north to South Dakota and New Jersey. Old collections are known from East Baton Rouge, Avoyelles, and Rapides parishes in Louisiana (Brown & Correll, 1942). More recent collections have been made from Calcasieu (Brooks & Maples, 1971) and Sabine (Carroll & Thomas, 1981) parishes. However, this species has been considered rare in the state (Thieret, 1980) and until the present finds the only extant population known in Louisiana was from a low woods in Sabine Parish. Recently, plants of *I. melanopoda* were found to be locally abundant and quite common in wet, low areas of unplowed soybean and cotton fields.

The new habitat for *I. melanopoda* in Louisiana was discovered on 8 May 1984. A low wet area in an unplowed soybean field in Richland Parish provided the first find. All the surrounding parts of the field had been treated with herbicides to kill the winter weeds in preparation for spring planting. The low area was too wet for tractors to negotiate so it had been left unsprayed. Close examination of the area revealed that literally tens of thousands of plants of *Isoëtes melanopoda* were thriving in the field. Many plants in the treated areas showed no ill effects of the herbicide, although all seed plants were dead. A week later the entire field, including the low area, was disced and planted in soybeans.

During the period of a month I found new populations in Richland, Ouachita, Morehouse, Caldwell, Catahoula, West Carroll, Bossier, and Caddo parishes. All these populations contained plants that were much larger, more numerous, and less scattered than those previously collected from Sabine Parish (Carroll & Thomas, 1981). All populations found in the nine new parishes were either in cultivated fields (soybean—West Carroll, Richland, Catahoula; cotton—Morehouse; oat—Franklin; or open wet areas like pastures or hayfields—Caldwell, Ouachita, Bossier, Caddo). The areas might be flooded during heavy winter rains but in no areas were plants found completely submerged in water. The areas are dominated by *Juncus* and Cyperaceae with a few dicotyledons. The most abundant *Juncus* species are *Juncus biflorus, J. bufonius, J. diffusissimus, J. dudleyi, J. scirpoides, J. validus,* and rarely *J. effusus* or *J. coriaceus*. Cyperaceae is represented by *Carex frankii, Cyperus iria, C. pseudovegetus, Fimbristylis autumnalis, F. miliacea, F. vahlii, Scirpus koilolepis,* and undetermined species of *Eleocharis*. Dicotyledons included *Tillaea aquatica, Plantago hybrida, P. virginica, Callitriche peploides, Cerastium glomeratum, Ranunculus pusillus, Gratiola neglecta, G. virginca, Lindernia anagallidea,* and *Linaria canadensis*. The sterile low specimens of *Eleocharis* and *Juncus* make the *Isoëtes* specimens very difficult to locate at first. Concentrated searching reveals that *Isoëtes melanopoda*

leaves are more pea-green than those of the seed plants. Leaves of *Isoëtes* are splayed in the open; this character is lost in thick vegetation.

Current cultivation practices for cotton and soybeans seem to favor the spread of *Isoëtes melanopoda* in the South. When a farmer begins to prepare his fields for planting in the spring, low, wet areas are left to be disced later after further drying. By the time these low areas are dry, spores of *Isoëtes* are mature. The spores spend the summer in the ground and apparently germinate only after fall rains begin. The corms of old plants are also dormant during the summer and new leaves appear again in November. Denser populations of *I. melanopoda* occur in cultivated areas than in uncultivated ones. In the Franklin Parish population, plants were in distinct rows following the furrows left by individual discs. All populations in Ouachita, West Carroll, and Franklin parishes checked in December, 1984 had thousands of plants from old corms bearing leaves about four inches tall. These leaves grew to about 10 inches in length by April 1985 and were withered and dead by 1 June 1985. Almost all cotton and soybean fields in this area lay fallow from harvest time in October and November until the following April or early May. Although *Isoëtes* is a perennial plant, its summer dormancy allows it advantages similar to those of winter annuals. Recent improvements in laser technology have made it possible for farmers to have their fields leveled and sloped to prevent low areas. No populations of *Isoëtes* were found in these fields, perhaps because they can now be disced earlier and thus before the spores have had a chance to mature.

Collections made during 1984: LOUISIANA.—**Richland Parish:** Unplowed soybean field S of La. 15 on Richland Plantation, 1.5 miles W of Rhymes and La. 133, Sec. 10, T16N, R5E, 8 May, *Thomas 88366*. **Franklin Parish:** Edge of oat field W of dirt road, S of La. 132 and Old Mixon School near Murphy woods, Sec. 15, T16N, R8E, 8 May, *Thomas 88417*. **Sabine Parish:** Wet woods beside U.S. 171 at Bayou San Patricio, about 2.8 miles NW of Noble and La. 483, Sec. 33, T9N, R13W, 15 May, *Thomas 88666 & Taylor 6956*. **Ouachita Parish:** Low wet area of pasture on Layton Farm, S of U.S. 80 at Rifle Range Road E of La. 139 and Sicard, E of Monroe, Sec. 71, T18N, R4E, 23 May, *Thomas 88835*. **Morehouse Parish:** Wet, low unplowed area in soybean field beside paved road N of Little Lake Lafourche and La. 595 and S of Gum Ridge, Sec. 21, T18N, R6E, 23 May, *Thomas 88846*. **Caldwell Parish:** shallow, temporary pool at gas pipe line beside La. 133, 4.4 miles N of La. 847 N of Hebert, Sec. 31, T15N, R5E, 24 May, *Thomas & Earthman 88879*. **Catahoula Parish:** Wet area at edge of field at ball park beside La. 124, S edge of Harrisonburg, Sec. 38, T9N, R6E, 24 May, *Thomas & Earthman 8886*. **West Carroll Parish:** Low end of soybean field S of La. 2 at Redwing near Big Colewa Bayou W of Oak Grove, Sec. 13, T21N, R9E, 25 May, *Thomas 88904*. **Bossier Parish:** Low edge of hay field in creek bottom N of La. 2 at branch of Cypress Bayou, 1.1 miles E of La. 157 and E of Plain Dealing, Sec. 12, T22N, R13W, 1 June, *Thomas 88994 & Taylor 7166*. **Caddo Parish:** Low, open wet area dominated by *Juncus* near a small stream on Kendrick Road W of La. 1 and 2.7 miles N of Vivian, Sec. 11, T22N, R16W, 1 June, *Thomas 89029 & Taylor 7201*.

Voucher specimens of all collections are on deposit in Northeast Louisiana University Herbarium (NLU). Duplicates of some of the collections are available for exchange.

LITERATURE CITED

BROOKS, J. H. and R. S. MAPLES, JR. 1971. A recent find of *Isoetes* in Louisiana. Amer. Fern J. 61: 186.

BROWN, C. A. and D. . S. CORRELL. 1942. *Ferns and fern allies of Louisiana.* Baton Rouge: Louisiana State University Press.

CARROLL, A. N. and R. D. THOMAS. 1981. *Isoetes melanopoda* in Sabine Parish, Louisiana. Phytologia 48:274–275.

THIERET, J. W. 1980. *Louisiana ferns and fern allies.* Lafayette: Louisiana Natural History Museum.

SHORTER NOTE

A New Station for *Dicranopteris flexuosa* in Bay County, Florida.—While performing a routine botanical field survey at Bay Point Resort near Panama City, Florida, on 7 November 1984, I discovered a small colony of *Dicranopteris flexuosa* (Schrad.) Underw. (forked fern or net fern) in a shallow empty drainage ditch passing through a slash pine forest southeast of the junction of Delwood Beach Road and Magnolia Beach Road. The plants were situated at the upper edge of the ditch slope, were rooted in soil consisting of whitish sand and dark organic particles, and grew with *Lycopodium cernuum* and *Woodwardia areolata.* This habitat is similar to other sites where *D. flexuosa* has previously been found in the southeastern United States (Wherry, *The Southern fern guide.* 1964; Lakela & Long, *Ferns of Florida.* 1976).

This gleicheniaceous fern, which is native to Mexico, South America, and the West Indies, was first collected in the United States in 1913 in Mobile County, Alabama, but did not persist there (Small, *Ferns of the Southeastern States.* 1938; Dean, *Ferns of Alabama,* rev. ed. 1969). Likewise, in 1947 it was discovered in a transient colony in Osceola County, Florida, and in 1955 a colony was found in Hillsborough County, Florida, that was still extant in 1964 (Wherry, op. cit.). Lakela and Long (op. cit.), however, reported no recent collections of this fern. The present account is thus the first documented report of *D. flexuosa* in the United States in 20 years, and the Bay County station constitutes an extension of 400 kilometers northwestward from the last previously documented site in Hillsborough County. *Dicranopteris flexuosa* is also hereby verified as an extant natural element of the pteridophyte flora of Florida and the United States. Owing to its obvious rarity, its inclusion on Florida's rare and endangered biota lists is certainly warranted. Herbarium specimens (*Burkhalter 9784*) have been deposited at UWFP, FSU, and FLAS.

Dr. Michael I. Cousens, a pteridologist from the University of West Florida, visited the Bay County *Dicranopteris* colony on 19 January 1985 and collected frond material for gel electrophoretic analyses. He also discovered a number of *Dicranopteris* gametophytes at that time, which possibly indicates that this small isolated colony of this interesting tropical fern is reproducing in the seemingly nonsalubrious climate of northwest Florida.—JAMES R. BURKHALTER, The Herbarium, Building 58, Room 77, University of West Florida, Pensacola, FL 32514.